

WHAT IS CLAIMED IS:

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1. A display device comprising:

an active matrix circuit comprising a plurality of pixel TFTs disposed in matrix;

and

a source driver and a gate driver which drive said active matrix circuit,

wherein n bit information out of m bit digital video data inputted from an external
is used for a voltage gray scale method, and (m-n) bit information is used for a time ratio gray
scale method, where said m and said n are integers equal to or larger than 2 and satisfy $m > n$,
and

wherein said voltage gray scale method and said time ratio gray scale method are
conducted simultaneously.

2. A display device comprising:

an active matrix circuit comprising a plurality of pixel TFTs disposed in matrix;

and

a source driver and a gate driver which drive said active matrix circuit,

wherein n bit information out of m bit digital video data inputted from an external
is used for a voltage gray scale method, and (m-n) bit information is used for a time ratio gray
scale method, where said m and said n are integers equal to or larger than 2 and satisfy $m > n$,
and

wherein said voltage gray scale method are conducted first and said time ratio gray
scale method are conducted next.

3. A display device comprising:

an active matrix circuit comprising a plurality of pixel TFTs disposed in matrix;

a source driver and a gate driver which drive said active matrix circuit; and

a circuit which converts m bit digital video data inputted from an external into n bit

5 digital video data and provides said n bit digital video data to said source driver, where said m and said n are integers equal to or larger than 2 and satisfy $m > n$,

wherein said voltage gray scale method and said time ratio gray scale method are conducted simultaneously, and

wherein one frame image comprises 2^{m-n} subframes.

10 4. A display device comprising:

an active matrix circuit comprising a plurality of pixel TFTs disposed in matrix;

a source driver and a gate driver which drive said active matrix circuit; and

a circuit which converts m bit digital video data inputted from an external into n bit

15 digital video data and provides said n bit digital video data to said source driver, where said m and said n are integers equal to or larger than 2 and satisfy $m > n$,

wherein a voltage gray scale method are conducted first and a time ratio gray-scale method are conducted next, and

wherein one frame image comprises 2^{m-n} subframes.

20 5. A display device comprising:

an active matrix circuit comprising a plurality of pixel TFTs disposed in matrix;

and

a source driver and a gate driver which drive said active matrix circuit,

wherein n bit information out of m bit digital video data inputted from an external is used for a voltage gray scale method and (m-n) bit information is used for a time ratio gray scale method, where said m and said n are integers equal to or larger than 2 and satisfy $m > n$,

5 wherein said voltage gray scale method and said time ratio gray scale method are conducted simultaneously, and

wherein an image is displayed by an image gray scale of $(2^m - (2^{m-n} - 1))$ patterns.

6. A display device comprising:

10 an active matrix circuit comprising a plurality of pixel TFTs disposed in matrix;

and

a source driver and a gate driver which drive said active matrix circuit,

wherein n bit information out of m bit digital video data inputted from an external is used for a voltage gray scale method and (m-n) bit information is used for a time ratio gray scale method, where said m and said n are integers equal to or larger than 2 and satisfy $m > n$,

15 wherein said voltage gray scale method are conducted first and said time ratio gray scale method are conducted next, and

wherein an image is displayed by an image gray scale of $(2^m - (2^{m-n} - 1))$ patterns.

20 7. A display device comprising:

an active matrix circuit comprising a plurality of pixel TFTs disposed in matrix;

a source driver and a gate driver which drive said active matrix circuit; and

a circuit which converts m bit digital video data inputted from an external into n bit

digital video data and provides said n bit digital video data to said source driver, wherein said m and said n are integers equal to or larger than 2 and satisfy $m > n$,

wherein a voltage gray scale method and a time ratio gray scale method are conducted simultaneously,

5 wherein one frame image comprises 2^{m-n} subframes, and

wherein an image is displayed by an image gray scale of $(2^m - (2^{m-n} - 1))$ patterns.

8. A display device comprising:

an active matrix circuit comprising a plurality of pixel TFTs disposed in matrix;

10 a source driver and a gate driver which drive said active matrix circuit; and

a circuit which converts m bit digital video data inputted from an external into n bit digital video data and provides said n bit digital video data to said source driver, wherein said m and said n are integers equal to or larger than 2 and satisfy $m > n$,

15 wherein a voltage gray scale method are conducted first and a time ratio gray scale method are conducted next,

wherein one frame image comprises 2^{m-n} subframes, and

wherein an image is displayed by an image gray scale of $(2^m - (2^{m-n} - 1))$ patterns.

claim 1

20 9. A display device according to any one of claims 1 to 8 wherein said display device comprises thresholdless antiferroelectric mixed liquid crystal indicating electro-optical characteristic of V-shape.

claim 1

25 10. A display device according to any one of claims 1 to 8 wherein said m is 8 and said n is 2.

11. A display device according to ~~any one of claims 1 to 8~~ wherein said m is 12 and said n is 4. *claim 1*

5 12. A rear projector comprising three of the display devices according to ~~any one of claims 1 to 8.~~ *claim 1*

13. A front projector comprising three of the display devices according to ~~any one of claims 1 to 8.~~ *claim 1*

14. A single plate type rear projector comprising a display device according to ~~any one of claims 1 to 8.~~ *claim 1*

15. A goggle type display comprising two of the display device according to ~~any one of claims 1 to 8.~~ *claim 1*

16. A portable information terminal comprising a display device according to ~~any one of claims 1 to 8.~~ *claim 1*

20 17. A notebook type personal computer comprising a display device according to ~~any one of claims 1 to 8.~~ *claim 1*

18. An EL display comprising a display device according to ~~any one of claims 1 to 8.~~ *claim 1*

